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| Lesson Title: Decomposers are our Friends |
| Subject area / course / grade level: 4th grade |
| Introduction: What happens to dead plants and animals?  How do living things interact with one another and with the non-living elements in their environment? |
| Lesson Length: 1- 60 min block to start the engagement and beginning of experiment and then 5-10 minutes everyday for 10 school days. 1 final 60 min block for closure and reflection |
| Materials:   * Read Well Unit 17 Science Digest (non-fiction reading for concepts of food chains, food webs, energy flow, decomposers, producers, and consumers) * Houghton Mifflin Harcourt 4th grade Science textbook Chapter 3   <http://astroventure.arc.nasa.gov/teachers/pdf/AV-Biolesson-5.pdf>   * The above website for the specific lesson on the experiment * Word Sort * Reciprocal teaching cards |
| Lesson Overview:   * Nonfiction text is a harder reading material; therefore, the following lesson is to practice reading strategies, tapping prior knowledge, evoking questions, self-evaluation, and spark interest, to enhance comprehension of vocabulary and concepts about the role of decomposers and the flow of energy in an ecosystem. |
| Tennessee Standards:  Science:  GLE 0407.3.1 Demonstrate that plants require light energy to grow and survive.  GLE 0407.3.2 Investigate different ways that organisms meet their energy needs.  SPI 0407.3.1 Determine how different organisms function within an environment in terms of their location on an energy pyramid.  Reading:  SPI 0401.6.1 Select questions used to focus and clarify thinking before, during, and after reading. |
| Lesson objective(s):   * Students will explain why decomposers are important to other living things. * Students will use inquiry process to determine factor(s) that cause rotting. * Students will compare and contrast a food web and food chain. * Students will understand the flow of energy from sun to consumers. |
| ENGAGEMENT:  Question #1: What happens if you leave food in the refrigerator for too long?  **Think-Pair-Share, or Tell Each Other:** Rather than hearing a few responses from the class, ENGAGE ALL students by having them share their answers to the question with each other. This should take no more than 30-45 seconds. |
| EXPLORATION:   * Question #2: What causes rotting?   **List-Group-Label:** Have the students *Tell Each Other* for 30-45 seconds. Then QUICKLY record responses—**List**—from the class on the board (60 seconds). Ask students to *Tell Each Other* for 30 seconds what kinds of categories could be formed—group the categories on the board—**Group—**(45 seconds). Lastly, ask for titles for the categories**—Label.** Students will have further explored the notion of decomposing using higher order thinking to group and label.   * Follow the experiment on the website listed above. Observations through the rotting process. |
| EXPLANATION:   * Discussing Student Observations   Rather than hearing a few responses, VALUE ALL responses using a **Carousel** and **Graffiti Boards**. Write three following questions at the top of three large charts and attach to the walls in the room. If the class is large, make two copies of the 3 charts—two different sets of students move sequentially among the three charts. This way, there are not too many students in any one group. A range of responses from the students are easily seen and discussed.  Question 1: What items caused the fruit or vegetable to rot?  Question 2: What observations did you make during your  experiment?  Question 3: Is mold a living thing? Explain your answer. |
| ELABORATION   * In small groups, have the students conduct an open word sort, and then a closed word sort. * Discussion of the decomposing process. Also, discuss the role decomposers play in the food chain. |
| EVALUATION   * In Chapter 3 Science textbook pgs. 83-95, use Reciprocal Teaching roles to discuss the reading along with questions.   + Question 1: How do decomposers get their energy?   + Question 2: What happens to the materials that make up dead animals and plants?   + Question 3: Why are decomposers an important part to our environment?   + Question 4: Looking at the graphics on page 94, what can we conclude about how decomposers are connected to other living things. * In groups of four, each person gets a discussion role indicated on one of four cards given:   1. Questioner—asks the question  2. Predictor—predicts BRIEFLY what may be the answer  3. Clarifier—clarifies any terms in the question  Then all four students discuss the question.  4. Summarizer—summarizes all responses into a concise statement |

**WORD SORT**

**for ELABORATION Lesson**

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| --- | --- | --- | --- |
| producer | energy | omnivore | photosynthesis |
| nutrients | consumer | break down | oxygen |
| solar energy | herbivore | decomposer | carnivore |
| web | chain | links | carbon dioxide |

A. Copy the Word Sort (4 x 4 grid on 8 ½ x 11 paper), cut words

apart, distribute one sort per group

B. Open Sort:

Categorize these terms in at least five ways.

C. Closed Sort:

Sort according to being related